

Remarks/Arguments

I. Status of the Claims

In the second non-final Office Action, the Examiner indicated that claims 1-18, 35 and 36 are pending and rejected claims 1-18, 35 and 36 under 35 U.S.C. §103(a).

Claims 19-34 and 37-39 were previously canceled in light of a restriction requirement.

Claims 1-18, 35 and 36 are pending for reconsideration.

II. Rejections of Claims 1-18, 35 and 36 under 35 U.S.C. §103(a)

At pages 3-4, item 4 of the second non-final Office Action, claims 1-6, 8-18, 35 and 36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hartog et al. (U.S. Patent No. 6,236,542) in view of Labib et al. (U.S. Patent No. 6,454,871).

At pages 4-5, item 5 of the second non-final Office Action, claims 7 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hartog et al. (U.S. Patent No. 6,236,542) in view of Labib et al. (U.S. Patent No. 6,454,871) and further in view of Small et al. (U.S. Patent No. 6,251,150).

These rejections are respectfully traversed to the extent that they are maintained. As discussed below, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the primary reference to Hartog et al. or to combine the reference teachings as suggested by the Examiner. Moreover, as discussed below, there was no reasonable

expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner.

The Hartog et al. patent fails to disclose or suggest a self-cleaning colloidal slurry composition having “a surfactant adsorbed and/or precipitated onto a surface of at least one of the substrate and the colloidal particles, the surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles” as recited in each of the independent claims, i.e., claims 1 and 35. That is, the Hartog et al patent does not disclose or suggest including a surfactant in the colloidal slurry composition that forms a steric hindrance barrier between the colloidal particles and substrate surface.

In the second non-final Office Action, the Examiner admits to this deficiency in the primary reference to Hartog et al. stating, “Hartog et al fail to teach the composition comprises a surfactant that forms a steric hindrance barrier between the substrate and the colloidal particles.” In the second non-final Office Action, the Examiner indicates that this deficiency in the primary reference to Hartog et al. is cured by the secondary reference to Labib et al. However, the Applicants respectfully disagree.

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the primary reference to Hartog et al. or to combine the reference teachings as suggested by the Examiner. The teachings of the Labib et al. patent referred to by the Examiner are in the context of a mixed-phase cleaning solution. See, Labib et al. col. 15, lines 1-22. The superfinishing polish slurry described in the primary reference to Hartog et al. is not a cleaning solution. It would not have been obvious to one of ordinary skill in the art to apply teachings of the Labib et al. patent relating to a cleaning solution to the

superfinishing polish slurry described in the Hartog et al. patent because the superfinishing polish slurry is not a cleaning solution.

At most, one of ordinary skill in the art having the references before him would have been motivated by the teachings of the Labib et al. patent to introduce a surfactant into a cleaning solution used to clean substrates subsequent to the substrates being superfinished using the superfinishing polish process and slurry described in the Hartog et al. patent. As described in the Labib et al. patent, the motivation would be to promote faster and more efficient cleaning and removal of residues. See, Labib et al., col. 15, lines 11-14. Such residues remain subsequent to the superfinishing polish process and slurry described in the Hartog et al. patent. To say that the teachings of the Labib et al. patent would have motivated one of ordinary skill in the art at the time of the invention to introduce a surfactant into the superfinishing polish slurry described in the Hartog et al. patent is to use forbidden hindsight.

Moreover, there is no reasonable expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner. As mentioned above, the teachings of the Labib et al. patent referred to by the Examiner are in the context of a mixed-phase cleaning solution. See, Labib et al., col. 15, lines 1-22. The cleaning solution is mixed-phase, i.e., a gas and a liquid, and is for removing biofilm, debris, contaminants and the like from the surfaces of passageways. See, Labib et al., col. 1, lines 8-12. The Labib et al. patent teaches that the steric effect, when combined with the mechanical action of mixed-phase flow, promotes faster and more efficient cleaning and removal of residues. See, Labib et al., col. 15, lines 11-14. The superfinishing polish process and slurry described in the primary reference to Hartog et al. does not involve mixed-phase flow. Because the **combination** taught by the Labib et al. patent is absent (i.e., the mechanical action of mixed-phase flow in addition to the

steric effect), there is no reasonable expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In this case, neither the teaching/suggestion nor the reasonable expectation of success is found in the prior art. Instead, the Examiner appears to be using forbidden hindsight.

The conventional superfinishing polish process and slurry described in the Hartog et al. patent, and the problems associated therewith, are discussed in the Background section of the present application. See, for example, the discussion at page 4, lines 1-19 of the present application. In the conventional superfinishing polish process and slurry of the Hartog et al. patent, colloidal silica particles attach to the surface being polished not only by the usual London dispersion forces, van der Waals forces and hydrogen bonding, but unlike NiP, also by molecular bonding. Standard methods of scrubbing with soaps using polyvinyl alcohol (PVA) pads, ultrasonics or megasonics will not remove any significant percentage of such molecular bonded silica particles. Just as with aluminum-based substrates, if these particles are left in place on the glass substrate, glide defects occur that can ultimately cause disk drive failure. These glide defects further cause magnetic defects, corrosion and decreased disk life.

The existence of the steric hindrance barrier in the superfinishing polish slurry goes to the heart of the present invention -- the steric hindrance barrier prevents the colloidal particles from ever bonding to the surface of disk substrate in the first place and permits removal of substantially all of the remaining contamination from the surface of

the substrate using standard soap solutions. The steric hindrance barrier takes away molecular bonding, acid/base bonding, hydrogen bonding, and some or all of the van der Waals forces (amount depends on the surfactant composition and structure chosen) for the colloidal particles sticking to the surface of disk substrate. This allows conventional soap-based cleaning of disk substrate and removes the requirement for special and expensive extra cleaning steps, such as etching (undercutting) or micropolishing or polish etch, or combinations thereof.

The secondary reference to Small et al. is cited for allegedly teaching “a composition comprises colloidal particles of silica or alumina (aluminum oxide) having a pH of about 3.8 - 9.4 for maintaining the zeta potential of the slurry composition in order clean or remove the residue efficiently (col. 10, lines 8-15, col. 10, lines 48-51 and col. 11, lines 4-7).” However, the secondary reference to Small et al. does not cure the deficiency in the primary reference to Hartog et al. relative to a surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles.

Because the Hartog et al., Labib et al. and Small et al. patents, alone and in combination, fail to disclose or suggest a self-cleaning colloidal slurry composition having “a surfactant adsorbed and/or precipitated onto a surface of at least one of the substrate and the colloidal particles, the surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles” as recited in each of the independent claims, i.e., claims 1 (from which claims 2-18 depend, directly or indirectly) and 35 (from which claim 36 depends directly), the Applicants respectfully submit that dependent claims 2-18 and 36 also patentably define over the prior art.

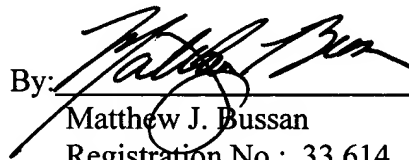
Therefore, the Applicants respectfully request reconsideration and withdrawal of these rejections of claims 1-18, 35 and 36 under §103(a).

III. Conclusion

In view of the foregoing comments, the Applicants respectfully submit that all of the pending claims (i.e., claims 1-18, 35 and 36) are in condition for allowance and that the application should be passed to issue.

If a conference would be of value in expediting the prosecution of this application, the Examiner is hereby invited to telephone the undersigned counsel at (847) 462-1937 to arrange for such a conference.

Respectfully submitted,

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